

Resistors

# Thick film rectangular

## MCR18 (3216 size: 1 / 4W)

●Features

- 1) Power rating of 1 / 4W
- 2) Highly reliable chip resistor Ruthenium oxide dielectric offers superior resistance to the elements.
- 3) Electrodes not corroded by soldering  
Thick film makes the electrodes very strong.
- 4) Leading the world in development and mass production.  
Since start of production in 1976 (first in the wold), this component has established a solid reputation as a general-purpose chip resistor.
- 5) ROHM resistors have approved ISO-9001 certification.  
Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

●Ratings

Item	Conditions	Specifications	
Rated power	Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C. <div> <p>Fig.1</p> </div>	0.25W (1 / 4W) at 70°C	
Rated voltage	The voltage rating is calculated by the following equation. If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage. <div> <math display="block">E = \sqrt{P \times R}</math> <p>               E: Rated voltage (V)                P: Rated power (W)                R: Nominal resistance (Ω)             </p> </div>	Limiting element voltage	200V
Nominal resistance	See Table 1.		
Operating temperature		-55°C to +155°C	

## Resistors

Jumper type

Resistance	Max. 50mΩ
Rated current	2A
Operating temperature	-55°C to +155°C

Table 1

Resistance tolerance	Resistance range (Ω)	Resistance temperature coefficient (ppm / °C)
F (±1%)	0.1 ≤ R < 0.15 (E24)	400±200
	0.15 ≤ R < 10 (E24)	±250
	10 ≤ R ≤ 2.2M (E24,96)	±100
J (±5%)	0.1 ≤ R < 0.15 (E24)	400±200
	0.15 ≤ R < 1 (E24)	±250
	1.0 ≤ R < 2.2 (E24)	500±350
	2.2 ≤ R < 10 (E24)	±500
	10 ≤ R ≤ 10M (E24)	±200

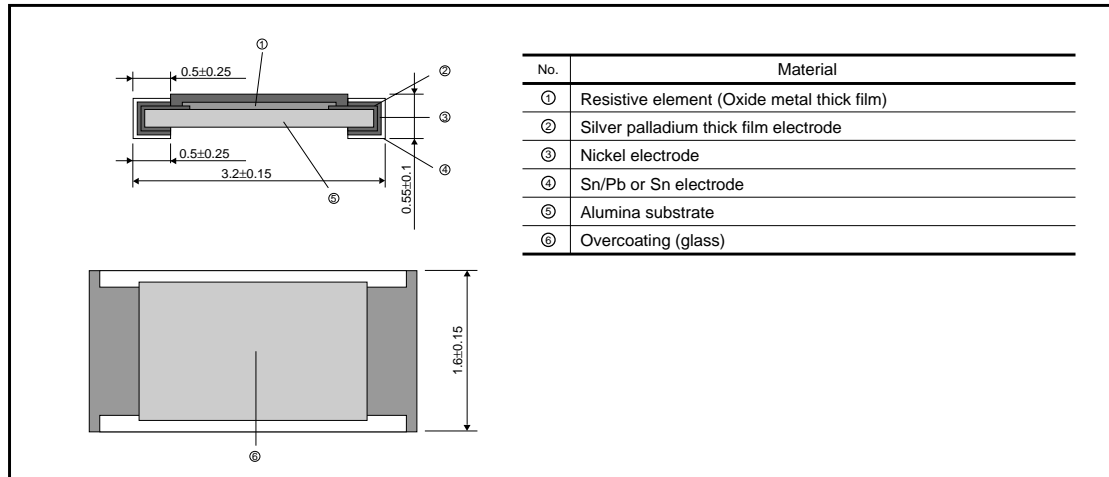
- Before using components in circuits where they will be exposed to transients such as pulse loads (short-duration, high-level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady state voltage that is greater than its rated voltage.

## ● Characteristics

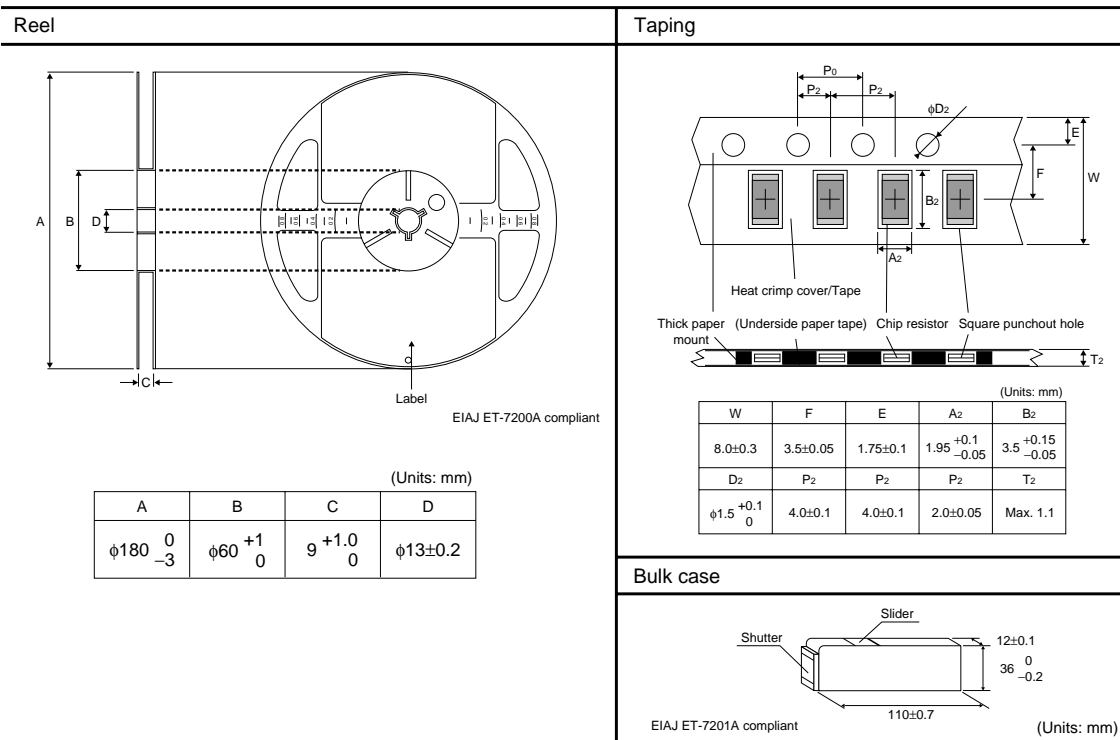
Item	Guaranteed value		Test conditions (JIS C 5201-1)
	Resistor type	Jumper type	
Resistance	J : ±5% F : ±1%	Max. 50mΩ	JIS C 5201-1 4.5
Variation of resistance with temperature	See Table.1		JIS C 5201-1 4.8 Measurement : -55 / +25 / +125°C
Overload	± (2.0%+0.1Ω)	Max. 50mΩ	JIS C 5201-1 4.13 Rated voltage (current) ×2.5, 2s. Limiting Element Voltage×2 : 400V
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.		JIS C 5201-1 4.17 Rosin-Ethanol (25%WT) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s.
Resistance to soldering heat	± (1.0%+0.05Ω) No remarkable abnormality on the appearance.	Max. 50mΩ	JIS C 5201-1 4.18 Soldering condition : 260±5°C Duration of immersion : 10±1s.
Rapid change of temperature	± (1.0%+0.05Ω)	Max. 50mΩ	JIS C 5201-1 4.19 Test temp. : -55°C~+125°C 5cyc
Damp heat, steady state	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.24 40°C, 93%RH Test time : 1,000h~1,048h
Endurance at 70°C	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.1 Rated voltage (current), 70°C 1.5h : ON – 0.5h : OFF Test time : 1,000h~1,048h
Endurance	± (3.0%+0.1Ω)	Max. 100mΩ	JIS C 5201-1 4.25.3 155°C Test time : 1,000h~1,048h
Resistance to solvent	± (1.0%+0.05Ω)	Max. 50mΩ	JIS C 5201-1 4.29 23±5°C, Immersion cleaning, 5±0.5min. Solvent : 2-propanol
Bend strength of the end face plating	± (1.0%+0.05Ω) Without mechanical damage such as breaks.	Max. 50mΩ	JIS C 5201-1 4.33

## Resistors

## ●External dimensions (Units : mm)

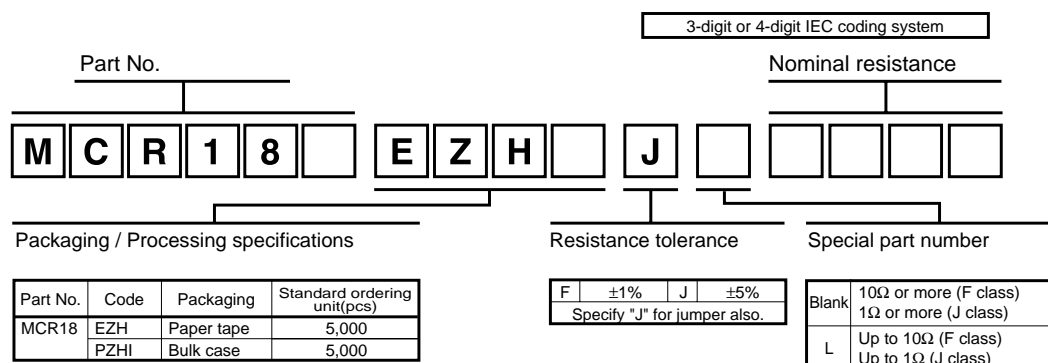


## ●Packaging



## Resistors

## ● Makeup of the part number



## ● Dimensions

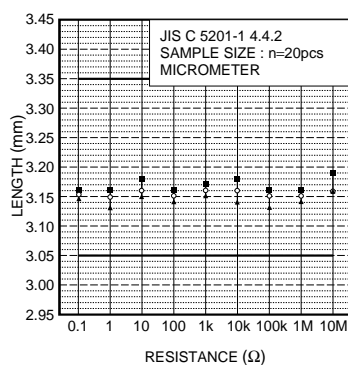


Fig.2 Dimensions (length)

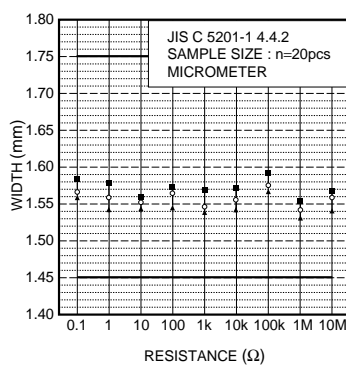


Fig.3 Dimensions (width)

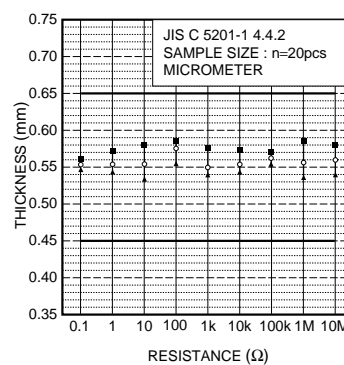


Fig.4 Dimensions (thickness)

## ● Electrical characteristics

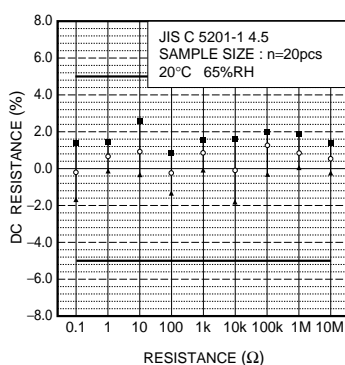


Fig.5 Resistance

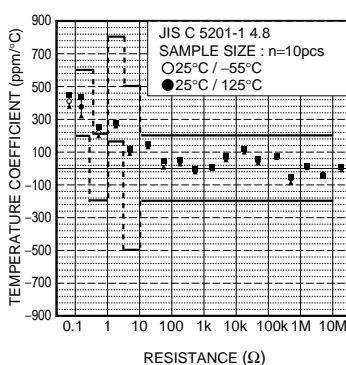


Fig.6 Variation resistance with temperature

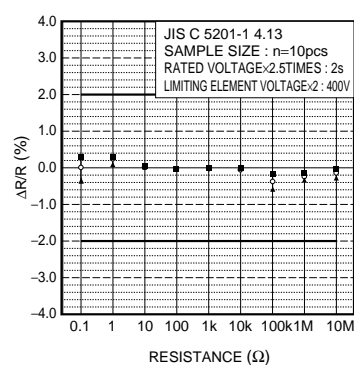


Fig.7 Overload

## Resistors

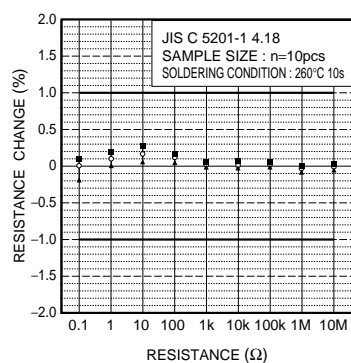


Fig.8 Resistance to soldering heat

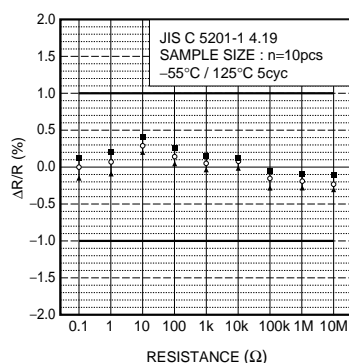


Fig.9 Rapid change of temperature

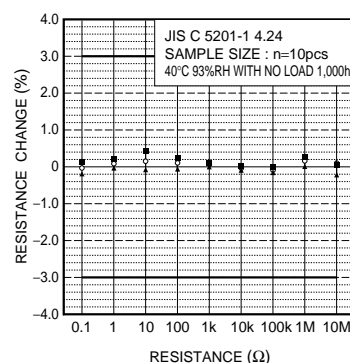


Fig.10 Damp heat, steady state

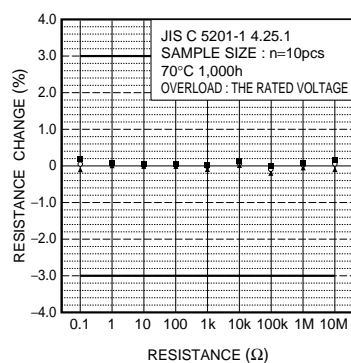


Fig.11 Endurance (at 70°C)

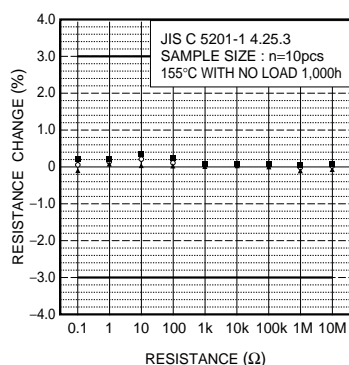


Fig.12 Endurance

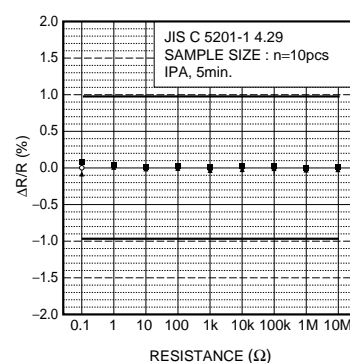


Fig.13 Resistance to solvents

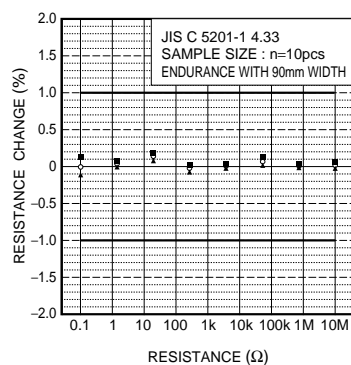


Fig.14 Bend strength of the end face plating